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CASE REPORT

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A Rare Case of Vesicourachal Diverticulum with Calculus in a 24-Year-Old Man

Mehmet Haydar Atalar[1 ABCDEFG], **Ismail Salk**[1 CDEF], **Ali Cetin**[2 ACDEF], **Nisa Bozbiyik**[1 EF]

[1] Department of Radiology, Cumhuriyet University, School of Medicine, Sivas, Turkey
[2] Department of Obstetrics and Gynecology, Cumhuriyet University, School of Medicine, Sivas, Turkey

Author's address: Mehmet Haydar Atalar, Department of Radiology, Cumhuriyet University School of Medicine, Sivas, Turkey, e-mail: mhatalar@gmail.com

Summary

Background: During embryonal period, complete obliteration of the urachus at the umbilicus and incomplete closure at the bladder level are the cause of vesicourachal diverticulum. This abnormality is a rare finding that is usually discovered incidentally during radiological evaluation. Occasionally, stones have been detected within the diverticulum.

Case Report: We present a case of a vesicourachal diverticulum with calculus diagnosed by multidetector computed tomography and confirmed surgically and histopathologically in a 24-year-old man.

Conclusions: During the radiological differential diagnosis of abnormalities of abdominal wall and urinary system, consideration of urachal abnormalities is important especially in symptomatic patients.

MeSH Keywords: Calculi • Multidetector Computed Tomography • Urachus • Urinary Bladder Diseases

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Background

Vesicourachal diverticulum is the persistence of the vesical portion of the urachus, generally presenting incidentally. It might be present in association with other urologic anomalies. The urachusis is an embryonic structure that connects the anterosuperior bladder to the umbilicus. In normal conditions, urachus involutes before birth and remains as a connective tissue band known as median umbilical ligament in urachal remnant disorders in which all or a portion of the urachus is found and these disorders are defined as patent urachus (50%), umbilical urachal sinus (15%), vesicourachal diverticulum (5%), and urachal cyst (30%). In vesicourachal diverticulum cases, urinary stone might develop [1]. We present a case of a vesicourachal diverticulum with calculus diagnosed using multidetector computed tomography (MDCT) in a 24-year-old male patient.

Case Report

A 24-year-old male patient was evaluated in our radiology laboratory for urologic complaints, including hematuria and pelvic pain. A physical examination on admission was normal. Pelvic ultrasonography showed a tubular structure, including a stone, related to the dome of the urinary bladder. On MDCT scan, there was a midline tubular structure, including a hyperdense stone located on the slightly right side of the bladder, extending to the umbilicus and increased convexity of the urinary bladder [Figure 1A–1C]. Using contrast media to fill the urinary bladder, urachus was opacified; however, it did not reach to the umbilicus. Preoperative diagnosis was confirmed as vesicourachal diverticulum with stone. Vesicourachal diverticulum was removed with stone, and the defect on the bladder was repaired. The postoperative course of the patient was uneventful, and he remained in a good clinical condition.

Discussion

During embryonic period, the urinary bladder develops from the ventral cloaca as an organ lying at the level of the umbilicus. Urachus extends from the umbilicus to the apex of the bladder after the regression of allantois at the end of the first half of pregnancy. After birth, the bladder migrates into the pelvis, and urachus remains as an extraperitoneal

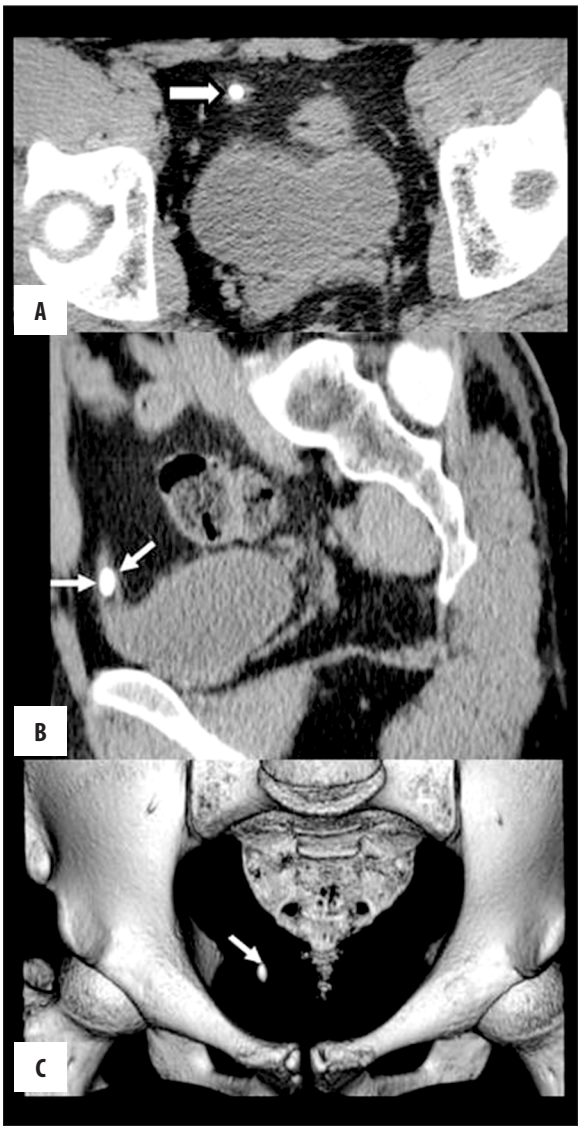

Figure 1. (**A**) Axial, (**B**) sagittal reformatted, and (**C**) 3-dimensional computed tomographic images showing a tubular structure, including a hyperdense stone on the anterosuperior aspect of the urinary bladder on slightly right side.

structure. Urachal abnormalities are uncommon in radiological practice [2,3].

Understanding the anatomy and the imaging features of urachal remnant diseases, along with the typical locations and distributions of these diseases, is essential for correct diagnosis and proper management [3]. Nowadays, urachal abnormalities are better visualized using MDCT and ultrasonography. Vesicourachal diverticulum is asymptomatic in most cases and is generally revealed incidentally on MDCT scans performed for unrelated reasons. It usually appears as a midline tubular structure, just above the anteroposterior segment of the dome of the urinary bladder. After stone formation, it might become symptomatic, and this leads to its diagnosis and management [4,5].

During differential diagnosis, primary adenocarcinomas of the urachus need to be considered because they may produce calcifications that might occur in 50–70% of cases and are accepted as nearly pathognomonic for urachal adenocarcinoma [6,7]. During radiological evaluation, they are seen as supravesical complex masses with or without calcifications.

Conclusions

Vesicourachal diverticulum does not require treatment in most patients; however, if there is urinary stone formation, surgical management is indicated. During the radiological differential diagnosis of abnormalities of the abdominal wall and urinary system, consideration of urachal abnormalities is important, especially in symptomatic patients. Detailed definition of vesicourachal abnormalities helps surgeons to determine the extent of surgery and makes important contribution to the success of surgical outcome.

References:

1. MedPix topic 9512. Vesicourachal diverticulum. Available at: *http://rad.usuhs.edu/medpix*. Accessed on November, 2013
2. Schnyder P, Candardjis G: Vesicourachal diverticulum: CT diagnosis in two adults. Am J Roentgenol, 1981; 137: 1063–65
3. Yu JS, Kim KW, Lee HJ et al: Urachal remnant diseases: spectrum of CT and US findings. Radiographics, 2001; 21: 451–61
4. Ozbülbül NI, Dagli M, Akdo gan G, Olçer T: CT urography of a vesicourachal diverticulum containing calculi. Diagn Interv Radiol, 2010; 16: 56–58
5. Ansari MS, Hemal AK: A rare case of urachovesical calculus: A diagnostic dilemma and endo-laparoscopic management. J Laparoendosc Adv Surg Tech A, 2002; 12: 281–83
6. Monteiro V, Cunha TM: Urachal carcinoma: Imaging findings. Acta Radiol Short Rep, 2012; 1(1). pii: arsr.2011.110018
7. Koster IM, Cleyndert P, Giard RW: Best cases from the AFIP: Urachal carcinoma. Radiographics, 2009; 29: 939–42